

# Gummy Shark (2018)

*Mustelus antarcticus*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth, Western Australia, Victoria, Tasmania, South Australia	Southern Australia	CIF, ITF, JASDGLMF, JASDGLMF    WCDGLIMF, MSF, OF, PPBWPF, SESSF (CTS), SESSF (GABTS), SESSF (GHTS), SF, VRLF, WCDGLIMF	Sustainable	Biomass (pup production), catch
New South Wales	Eastern Australia	N/A, OTF, OTLF	Undefined	

SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector) (CTH), SESSF (GABTS) Southern and Eastern Scalefish and Shark Fishery (Great Australian Bight Trawl Sector) (CTH), SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (CTH), N/A Not Applicable (NSW), OTF Ocean Trawl Fishery (NSW), OTLF Ocean Trap and Line Fishery (NSW), MSF Marine Scalefish Fishery (SA), SF Scalefish Fishery (TAS), CIF Corner Inlet Fishery (VIC), OF Ocean Fishery (VIC), PPBWPF Port Phillip Bay and Western Port Bay Fishery (VIC), ITF Inshore Trawl Fishery (VIC), VRLF Victorian Rock Lobster Fishery (VIC), JASDGLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA), WCDGLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WA), JASDGLMF || WCDGLIMF Various Fisheries combined due to 3 boat rule (WA)

## STOCK STRUCTURE

Gummy Shark (*Mustelus antarcticus*) is distributed throughout the temperate waters of Australia, from at least Port Stephens in New South Wales, to Geraldton in Western Australia (including Tasmania) [Gardner and Ward 2002, Last and Stevens 2009]. The most recent research on biological stock structure for Gummy Shark [White and Last 2008] suggests there is most likely one biological stock in southern Australia (extending from the lower west coast of Western Australia to Jervis Bay in New South Wales) and a second biological stock in eastern Australia (extending from Newcastle to the Clarence River in New South Wales). Conventional

tagging showed adult Gummy Sharks exhibit broad-scale displacements from tagging locations of up to 2 362 km in 6.8 years, yet only 15 per cent of adults were recaptured > 250 km from the tagging location. The mean displacement was approximately 150 km [Walker 2000]. Acoustic tagging in Western Australia showed comparable movements, with average long-distance displacements of 238 km and maximum displacements of > 900 km [Braccini et al. 2017].

Here, assessment of stock status is presented at the biological stock level—Southern Australia and Eastern Australia.

## STOCK STATUS

**Eastern Australia** Available information indicates that there is little catch of Gummy Shark (less than 50 t per year) from the Eastern Australia biological stock [Rowling et al. 2010]. In the 2017 calendar year, the total catch was around 23 t. There is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, the Eastern Australia biological stock is classified as an **undefined stock**.

**Southern Australia** There is a close relationship between the number of pups and both the number, and length, of females [Walker 1992] and so the Commonwealth assessment uses pup production as an indicator of biomass for Gummy Shark. The stock assessment model incorporates available catch data from all jurisdictions impacting the stock. The base-case model from the most recent assessment [Punt et al. 2016] estimated 2016 pup production as a proportion of the unfished level of pup production ( $P_0$ ; 1927) to be above 0.48 $P_0$  (48 per cent of virgin pup production). Therefore, this part of the biological stock is not considered to be recruitment impaired.

The most recent stock assessment gave a recommended biological catch (RBC) for 2016, 2017 and 2018 of 2 080 t, 1 878 t and 1 807 t, respectively [Punt et al. 2016]. Total catch in the Commonwealth Southern and Eastern Scalefish and Shark Fishery (SESSF) for 2016 was 1 799 t; in 2017 it was 1 673 t and in 2018 it was 1 744 t. This level of fishing mortality is unlikely to cause the biological stock to become recruitment impaired.

In South Australia, the commercial multispecies, multi-gear and multi-sectoral Marine Scalefish Fishery (MSF) takes Gummy Shark as bycatch using demersal long-lines, gill-nets and hand-lines. The total reported catch of Gummy Shark by the MSF in 2017 was 73.3 t. There are limited South Australian State-based commercial licence holders that have been issued quota by the Australian Fisheries Management Authority via South Australian Coastal Waters permits. All other MSF licence holders are entitled to a bycatch limit of five sharks per day, and a possession limit of 10 sharks on a fishing trip of more than one day [Steer et al. 2018]. Given the spatial overlap with the southern Australian coastal and shelf regions covered during the Commonwealth assessment processes, no separate formalised stock assessment is undertaken on Gummy Shark within South Australian State-managed waters. Gummy Sharks are also targeted by clients of the South Australian Charter Fishery [Rogers et al. 2017] and by recreational anglers [Steer et al. 2018]. The South Australian State-wide recreational catch of Gummy Shark was estimated at approximately 37.03 t in 2013/14 [Giri and Hall 2015].

In Victoria, the majority of Gummy Shark is taken within the Corner Inlet Fishery using mesh net, and the Port Phillip and Western Port Bay Fishery using hook and line, and mesh net. Catch rates in both fisheries have indicated declines since around 2006 [VFA 2017]. However, considering the Victorian component accounts for less than one per cent of the Commonwealth catch, the level of fishing mortality in Victoria is unlikely to significantly influence the stock

biomass.

The Western Australian component of the stock was recently assessed using a risk-based weight of evidence approach using all available lines of evidence, including simulated biomass trajectories derived from a combination of demographic modelling and catch-only stock reduction analysis [Braccini et al. in prep]. This assessment estimated a “Low” current risk level for the Gummy Shark stock, with 87 per cent, 100 per cent and 100 per cent of the simulated current (2015–16) relative total biomass trajectories being above the target, threshold and limit biomass reference points, respectively [Braccini et al. in prep]. Therefore, this part of the biological stock is not considered to be recruitment impaired.

The above evidence indicates that the biomass of this stock is unlikely to be depleted, recruitment is unlikely to be impaired, and the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

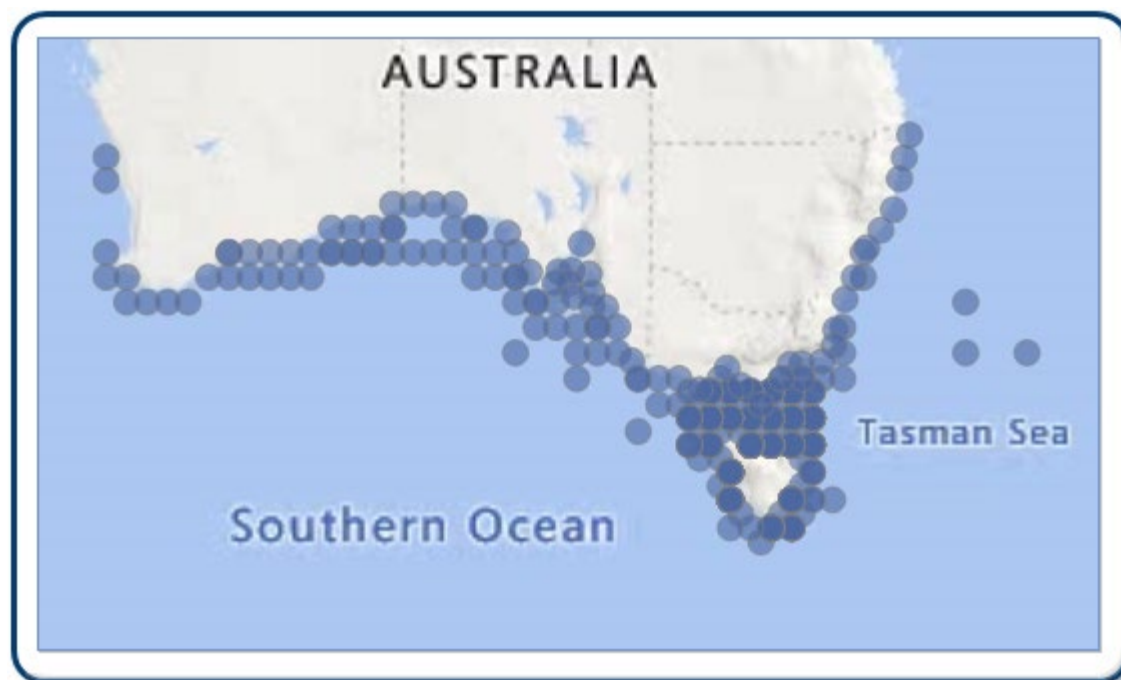
On the basis of the evidence provided above, the Southern Australia biological stock is classified as a **sustainable stock**.

## BIOLOGY

**Gummy Shark biology** [Moulton et al. 1992, Walker 2007, Walker 2010]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Gummy Shark	16 years, 1 850 mm TL (25 kg total body mass)	Females 1 105–1 253 mm TL Males 950–1 133 mm TL

## DISTRIBUTION



Distribution of reported commercial catch of Gummy Shark

## TABLES

Commercial Catch Methods	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
Danish Seine	✓					

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Demersal Gillnet	✓					
Demersal Longline	✓	✓		✓		
Demersal Pair Trawl	✓					
Dropline	✓	✓		✓		✓
Fish Trap						✓
Gillnet				✓		✓
Hand Line, Hand Reel or Powered Reels				✓		✓
Handline (mechanised)	✓					
Hook and Line	✓	✓			✓	
Longline (Unspecified)						✓
Mesh Net				✓		
Midwater Trawl	✓					
Net					✓	
Otter Trawl	✓	✓				
Rod and reel	✓					
Traps and Pots					✓	
Trawl	✓					
Trotline	✓	✓				
Unspecified		✓	✓	✓	✓	✓

Fishing methods	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
<b>Commercial</b>						
Danish Seine	✓					
Demersal Gillnet	✓					
Demersal Longline	✓	✓		✓		
Dropline	✓	✓		✓		
Gillnet				✓		✓
Hand Line, Hand Reel or Powered Reels				✓		
Hook and Line		✓			✓	
Longline (Unspecified)						✓
Net					✓	
Otter Trawl	✓	✓				
Trotline		✓				

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Unspecified		✓	✓	✓	✓	✓
<b>Recreational</b>						
Demersal Longline				✓		
Gillnet				✓		
Hook and Line		✓	✓	✓	✓	✓
<b>Management Methods</b>						
	<b>Commonwealth</b>	<b>New South Wales</b>	<b>South Australia</b>	<b>Tasmania</b>	<b>Victoria</b>	<b>Western Australia</b>
<b>Commercial</b>						
Effort limits (individual transferable effort)						✓
Gear restrictions	✓	✓	✓	✓	✓	✓
Individual transferable quota	✓					
Limited entry	✓	✓	✓	✓	✓	✓
Processing restrictions	✓	✓	✓			✓
Size limit	✓	✓	✓	✓	✓	
Spatial closures	✓	✓		✓	✓	✓
Total allowable catch	✓					
Trip limits			✓	✓		
<b>Indigenous</b>						
Bag limits			✓			
Customary fishing permits					✓	
Size limit			✓			
<b>Recreational</b>						
Bag limits		✓	✓	✓	✓	✓
Licence					✓	✓
Possession limit					✓	
Size limit			✓	✓	✓	
Spatial closures				✓	✓	✓
Trip limits				✓		
<b>Active Vessels</b>						
	<b>New South Wales</b>	<b>South Australia</b>	<b>Tasmania</b>	<b>Victoria</b>	<b>Western Australia</b>	

**STATUS OF AUSTRALIAN FISH STOCKS REPORT  
Gummy Shark (2018)**

	11 Fishing Business in EGF, 58 Fishing Business in OTF, 32 Fishing Business in OTLF,	117 Licences in MSF,	63 Vessels in SF,	18 Licence Holders in CIF, 28 Licence Holders in OF, 9 Licence Holders in PPBWPF, 8 Licence Holders in ITF, 7 Licence Holders in VRLF,	17 in JASDGLMF, 5 in WCDGLIMF, 15 in Charter,
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**EGF** Estuary General Fishery(NSW)

**OTF** Ocean Trawl Fishery(NSW)

**OTLF** Ocean Trap and Line Fishery(NSW)

**MSF** Marine Scalefish Fishery(SA)

**SF** Scalefish Fishery(TAS)

**CIF** Corner Inlet Fishery(VIC)

**OF** Ocean Fishery(VIC)

**PPBWPF** Port Phillip Bay and Western Port Bay Fishery (VIC)

**ITF** Inshore Trawl Fishery(VIC)

**VRLF** Victorian Rock Lobster Fishery(VIC)

**JASDGLMF** Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2)(WA)

**WCDGLIMF** West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery(WA)

**Charter** Tour Operator(WA)

<b>Catch</b>	<b>Commonwealth</b>	<b>New South Wales</b>	<b>South Australia</b>	<b>Tasmania</b>	<b>Victoria</b>	<b>Western Australia</b>
<b>Charter</b>						1.08 t
<b>Commercial</b>	85.4236t in SESSF (CTS), 54.609t in SESSF (GABTS), 1603.62t in SESSF (GHTS),	0.909t in N/A, 12.439t in OTF, 10.37t in OTLF,	73.2534t in MSF,	11.0696t in SF,	8.45896t in CIF, 0.2944t in ITF, 1.77483t in OF, 4.1316t in PPBWPF, 0.285t in VRLF,	405.067t in JASDGLMF    WCDGLIMF,
<b>Indigenous</b>	Unknown	Unknown	Unknown	Unknown	Unknown (No catch under permit)	Unknown but likely to be negligible
<b>Recreational</b>	Unknown	Unknown	37.03 t (in 2013–14)	Unknown	Unknown	934 individuals caught in 2015–16 (of which, 521 were kept). Shore-based catches are unknown

SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector) (CTH), SESSF (GABTS) Southern and Eastern Scalefish and Shark Fishery (Great Australian Bight Trawl Sector) (CTH), SESSF (GHTS) Southern and Eastern Scalefish and Shark Fishery (Gillnet Hook and Trap Sector) (CTH), N/A Not Applicable (NSW), OTF Ocean Trawl Fishery (NSW), OTLF Ocean Trap and Line Fishery (NSW), MSF Marine Scalefish Fishery (SA), SF Scalefish Fishery (TAS), CIF Corner Inlet Fishery (VIC), OF Ocean Fishery (VIC), PPBWPF Port Phillip Bay and Western Port Bay Fishery (VIC), ITF Inshore Trawl Fishery (VIC), VRLF Victorian Rock Lobster Fishery (VIC), JASDGLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA), WCDGLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WA), JASDGLMF || WCDGLIMF Various Fisheries combined due to 3 boat rule (WA),

**Commonwealth – Recreational** The Australian Government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters, under its management regulations.

**Commonwealth – Indigenous** The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of the Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters.

**Western Australia – Recreational (Management methods)** A recreational fishing from boat licence is required for recreational fishing from a powered vessel in Western Australia.

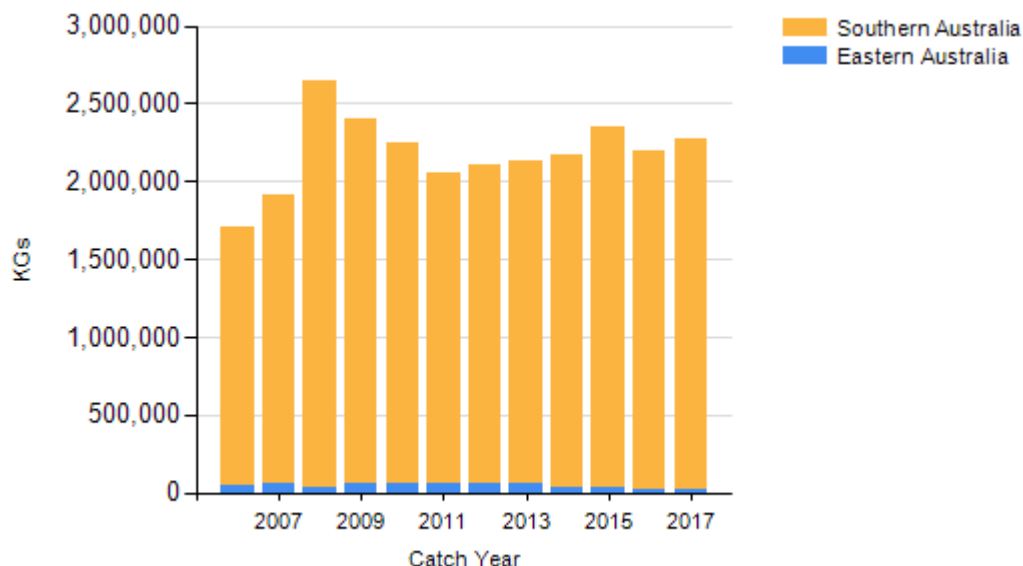
**New South Wales** Data provided for New South Wales align with the 2016–17 fiscal year with all vessels active in the fishery included (irrespective of whether they reported landing this species). The New South Wales EGF, OTF and OTLF fish both the Southern Australian and Eastern Australian stocks.

**New South Wales – Indigenous (Management Methods)** (a) Aboriginal Cultural Fishing Interim Access Arrangement—allows an Indigenous fisher in New South Wales to take in excess of a recreational bag limit in certain circumstances; for example, if they are doing so to provide fish to other community members who cannot harvest for themselves, (b) The Aboriginal cultural fishing authority is the authority that Indigenous persons can apply to take catches outside the recreational limits under the *Fisheries Management Act 1994* (NSW), Section 37 (1d)(3)(9), Aboriginal cultural fishing authority, and (c) In cases where the *Native Title Act 1993* (Cth) applies fishing activity can be undertaken by the person holding native title in line with S.211 of that Act, which provides for fishing activities for the purpose of satisfying their personal, domestic or non-commercial communal needs. In managing the resource where native title has been formally recognised, the native title holders are engaged with to ensure their native title rights are respected and inform management of the State's fisheries resources.

**Victoria – Indigenous** In Victoria, regulations for managing recreational fishing may not apply to fishing activities by Indigenous people. Victorian traditional owners may have rights under the *Commonwealth's Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs without the need to obtain a licence. Traditional Owners that have agreements under the *Traditional Owner Settlement Act 2010* (Vic) may also be authorised to fish without the requirement to hold a recreational fishing licence. Outside of these arrangements, Indigenous Victorians can apply for permits under the *Fisheries Act 1995* (Vic) that authorise fishing for specific Indigenous cultural ceremonies or events (for example, different catch and size limits or equipment). There were no Indigenous permits granted in 2017 and hence no Indigenous catch recorded.

**Tasmania – Recreational (Management Methods)** In Tasmania, a recreational licence is required for fishers using dropline or longline gear, along with nets, such as gillnet or beach seine. **Tasmania – Indigenous (Management Methods)** In Tasmania, Indigenous people engaged in aboriginal fishing activities in marine waters are exempt from holding recreational fishing licences, but must comply with all other fisheries rules as if they were licensed. Additionally, recreational bag and possession limits also apply. If using pots, rings, set lines or gillnets, Aborigines must obtain a unique identifying code (UIC). The policy document Recognition of Aboriginal Fishing Activities for issuing a UIC to a person for Aboriginal Fishing activity explains the steps to take in making an application for a UIC.

## CATCH CHART



Commercial catch of Gummy Shark - note confidential catch not shown

## EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

### ENVIRONMENTAL EFFECTS on Gummy Shark

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